THE VETERINARY RECORD

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888

No. 36. SEPTEMBER 5th, 1953 VOL. 65.

NITROFURAZONE IN POULTRY RATIONS

BY

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INTRODUCTION

Although the efficacy of certain sulpha drugs in the control of avian coccidiosis is established, a number of undesirable side-effects may arise if medication is prolonged. Asplin & Boyland (1947) have reported that the administration of sulphamezathine to young chicks via their drinking water at a level of 0·2 per cent. (W/V) for several weeks leads to a retardation in growth, haemorrhages and a decrease in the clotting rate of the blood.

Although Delaplane (1945) found no toxic symptoms in young broiler birds when sulphaquinoxaline was fed either at 0·05 or 0·1 per cent. in the mash, he and Milliff (1948) did find that this drug caused a marked reduction in egg production in R.I.R. pullets when fed at 0·05 per cent. in the food for 8 to 10 days. In a few cases death ensued. This apparent toxicity of sulphaquinoxaline was indicated by Gordon (1951) and confirmed by Davies & Kendall (1953).

Farr & Jaquette (1947) found that sulphamerazine in the mash of young chicks at levels higher than 0·25 per cent. caused a marked reduction in growth rate and splenic lesions when fed continuously for seven days. The splenic lesions appeared to be more prevalent in birds older than 48 days. Riedel (1950) has shown that this drug caused a marked reduction in egg production at a level of 0·5 per cent.

Recently nitrofurazone (5-nitro-2-furaldehyde semicarbazone) has been shown to be an effective coccidiostatic agent (Harwood & Stunz, 1949, 1950 ; Peterson & Hymas, 1950 ; Horton-Smith & Long, 1952). In their earlier studies Harwood & Stunz found a level in the mash of 0·0067 per cent. to be effective and observed no toxic symptoms when fed continuously to young chicks for five weeks but they did find an increase in incidence and severity of curled-toe paralysis when the ration was sub-optimal for riboflavin (1·7 mg. per lb.). Later, these workers (1951) reduced the level of the nitrofurazone to 0·0055 per cent. and fed it continuously for 12 weeks without noting any effect on growth-rate. Peterson & Hymas (1950) found, however, that nitrofurazone at a 0·02 per cent. level did produce a decline in growth rate and when raised to 0·04 and 0·05 per cent. induced toxic reactions in the birds. Horton-Smith & Long have confirmed this drug to be a valuable coccidiostatic agent at a level of 0·011 per cent., which is twice that used by Harwood & Stunz. In view of this higher level, it was felt that information regarding its effect, if any, on the young growing chick when fed for a prolonged period would be of practical value.

EXPERIMENTAL OBSERVATIONS AND COMMENTS

As part of a larger nutritional investigation, a group of 30 Brown Leghorn × Barred Rock pullets have been fed a ration containing 0·011 per cent. nitrofurazone continuously from day old to 16 weeks. The mash was of the conventional type containing 10 per cent. fish meal and 2½ per cent. skim milk. The riboflavin content estimated microbiologically was 3·4 mg. per lb. The control ration was identical except that no nitrofurazone was added. The birds were weighed individually at the intervals stated, and although the drug was discontinued at 16 weeks, the subsequent performance of the birds has been recorded.

AVERAGE BODYWEIGHT IN GRAMMES

Age	Control	Control NFZ (0·011 per cent.)
4 weeks	252·1	272·2
6 „	533·0	490·5
8 „	810·9	751·4
12 „	1,253·2	1,239·0
16 „	1,675·6	1,647·3

Production (over 18 weeks)

88·3 per cent. 87·5 per cent.

Hatchability

	Control	Control NFZ (0·011 per cent.).
Total eggs set	614	589
Hatchability of all eggs set ...	75·6%	67·0%
Hatchability of fertile eggs ...	92·4%	85·0%

Two deaths occurred in each group during the experimental period, the predominant cause being tumours. No coccidiosis or curled-toe paralysis was observed. The riboflavin content of the rations being supraoptimal, the nitrofurazone did not appear to interfere with the utilisation of this vitamin. The hatchability of eggs from birds which had received nitrofurazone was lower than that of the control groups, although certainly not less than that found under normal practice.

From these results it may be concluded that nitrofurazone at a level of 0·011 per cent., which is twice the concentration recommended for continuous feeding to chicks, exerted no significant effect on the rate of bodyweight gain when fed continuously for 16 weeks or on subsequent egg production. Some reduction in hatchability appears to have occurred, although this is probably not significant.

Acknowledgments.—We wish to express our thanks to Messrs. A. J. White, Ltd., for the supplies of nitrofurazone used in these experiments.

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THE VETERINARY INVESTIGATION SERVICE*

BY

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SUPERINTENDING VETERINARY INVESTIGATION OFFICER, MINISTRY OF AGRICULTURE AND FISHERIES

The Agricultural Advisory Service of England and Wales was developed between 1911 and 1914, with centres based on Universities or Agricultural Colleges, and some ten years later the first veterinary advisory officers were appointed to the advisory centres at Cardiff, Bangor and Newcastle. In the following decade, appointments were made to the remaining centres. In 1935 the officers were renamed "Veterinary Investigation Officers" and, in 1946, the service was incorporated into the Ministry of Agriculture and attached to its Animal Health Division, with the Veterinary Laboratory, Weybridge, as headquarters. The districts served by the Veterinary Investigation Service correspond to the old Provincial Agricultural Advisory areas, although two areas—those served by Newcastle and Reading—have been divided.

The Veterinary Investigation Officer is in charge of the technical staff at the regional laboratory, which is equipped to carry out all the commoner methods of diagnosis of disease among domesticated animals. He is available for consultations by veterinary surgeons and veterinary practitioners in the area and assists them in the diagnosis of causes of illness and disease in all types of livestock. He is also available for consultation by the field staff of the Animal Health Division and officers of the N.A.A.S.

The work at a centre is largely concerned with routine examinations of material submitted for examination by veterinary surgeons, such as milk samples for the presence of mastitis organisms; faeces samples for the presence of worm eggs, fluke eggs, coccidia, Johne bacilli, or pathogenic organisms such as salmonellae; and blood samples for agglutination test against *Brucella abortus* or *Salmonella pullorum*. In addition, carcases or portions of organs from poultry, pigs, sheep and cattle are examined. The object of the examinations, whether bacteriological or parasitological, is, of course, to determine the cause of the condition and devise measures to control further losses. These routine examinations frequently put the Veterinary Investigation Officer into contact with new local problems, which he investigates. The disease conditions dealt with are numerous and varied and it is not possible to detail many of them.

In January each year, a conference of all professional staff is held at Weybridge. The following conditions, which were dealt with at the 1953 Conference, provide examples of the investigations undertaken at one or more regional centres.

* Reprinted from the *N.A.A.S. Quarterly Review*, the journal of the National Agricultural Advisory Service, No. 20, 1953, by courtesy of the author and by permission of the Controller of H.M. Stationery Office.

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CATTLE

Hypocuprosis

For several years blood samples have been submitted to the Veterinary Laboratory, Weybridge, for copper estimation, and it has been established that copper deficiency occurs in many parts of Great Britain. The deficiency affects cattle of all ages, but symptoms are most marked in the young, actively growing calf. Recent work in East Anglia shows that copper deficiency depresses the growth of calves and yearling cattle by approximately one-third. Controlled trials have been carried out to find methods of prevention which can be used under ordinary farming conditions. One trial showed that symptoms of deficiency in calves could be prevented by dosing cows during pregnancy with copper sulphate. Calves from dosed cows thrived normally, whereas calves from undosed control cows all developed symptoms of deficiency when nine to ten weeks old. In yearlings, symptoms were prevented by feeding during the winter months a daily supplement of cake containing copper sulphate. It was also found that the disease could be prevented by top dressing the pastures in the spring with copper sulphate shortly before calving began, and, under these conditions, adult cows and calves did better than cattle grazing untreated pastures.

From the information obtained in the experiments, the live-weight gains of normal and deficient cattle from birth to 30 months old are estimated as follows:

Age	Management	Normal cattle		Deficient cattle	
		Weight	Daily Live weight increase	Weight	Daily Live weight increase
Months 0		lb. 90	lb.	lb. 90	lb.
5	At pasture with dams, May-Sept. (153 days)	426·6	2·2	319·5	1·5
12	Weaned in yards, Oct.-April (212 days) ...	638·6	1·0	531·5	1·0
18	At pasture, May-Oct. (184 days)	878·7	1·305	697·8	0·904
24	In yards, Nov.-April (181 days)	1,009	0·72	810	0·62
30	At pasture, May-Oct. (184 days)	1,277	1·457	936	0·685

It will be observed that the "deficient" cattle, when moved into yards on supplementary foods, achieved weight increases comparable with those of normal cattle. The reduced weight gains always occurred while the animals were on pasture. The "normal" cattle can be graded during their third summer, *i.e.*, before they are two-and-a-half years old, at a live weight of 11 to 12 cwt., whereas it is necessary to keep the copper-deficient cattle until the following summer.

Bracken Poisoning of Cattle

Bracken poisoning of cattle occurs all over Great Britain, often between July and September. The incidence of the condition varies from year to year and, contrary to the accepted view that animals rarely eat plants of a poisonous nature if ample herbage is available, cases of bracken poisoning have occurred on good pastures with a small area of bracken in one corner. Work on the problem was undertaken at Aberystwyth in collaboration with the staff of the

University College of Wales. For many years it was argued that the trouble was not bracken poisoning, but an acutely infectious disease. In the earlier years, animals under experiment died after they had eaten about two cwt. of the plant, but in some instances the bracken comprised the whole ration and it was suggested that death was actually due to starvation. The Aberystwyth workers arranged controlled experiments and fed harvested bracken and bracken which had been heated for half an hour at 208° to 210°F., and supplemented this with hay and high protein cake and, in one group, molasses. The results of these experiments are summarised in the following table:

Treatment	Length of Experiment	Amount of bracken eaten	Result	Weight variation
	Days	lb.		lb.
Bracken	57	285	Died — bracken poisoning	− 5
Bracken	56	280	Died — bracken poisoning	− 33
Heated bracken ...	83	750	Alive	− 30
Heated bracken ...	83	750	Alive	− 28
Bracken and molasses ...	69	350	Died — bracken poisoning	− 69
Bracken and molasses ...	55	275	Died — bracken poisoning	− 77
Bracken	60	300	Died — bracken poisoning	− 12
Heated bracken ...	80	740-750	Alive	+ 19

It will be seen that bracken contains a toxic substance which can be inactivated by heat. Characteristic changes occur in the blood picture of affected animals, notably a marked fall in the number of white blood cells, and these changes are the object of further study. Feeding experiments carried out last winter have confirmed the earlier findings relating to the toxicity of the plant.

Mastitis

Apart from the routine examinations of milk samples from individual cases of mastitis, which in many cases are from cows which have failed to respond to treatment, a special study has been made of the disease as a herd problem. This involves bacteriological examinations, at frequent intervals, of milk samples from all the milking cows, and the procedure largely depends on the type of organism which predominates. *Streptococcus agalactiae* is sensitive to penicillin, and a large number of herds have been cleared of this infection by treating with penicillin animals found to be infected. Further tests and treatment are often necessary, as a small "core" of infected cows may remain after the first treatment. As an example of what can be achieved, the results in 24 herds under supervision from the Bristol centre are given in the table below.

In all these herds, the full co-operation of the farmer was obtained—this is essential to success. It will be observed that the best results were obtained in herds where the milking machine only was used.

The problem of the types of mastitis caused by other organisms is being studied in a number of herds, special attention being paid to staphylococcal mastitis.

Vibriosis

Abortion in cattle and sheep as the result of *Vibrio foetus* infection has been recognised for many years, but it is only recently that this organism has been implicated as a cause of infertility in dairy cattle. The disease is diagnosed by the recovery of the organism from aborted foetuses, or by the application of the mucus agglutination test, devised by J. Lawson at Weybridge. There is no doubt that infection is transmitted by the bull, although it is extremely difficult to confirm the existence of the infection in this animal, except by using him on maiden heifers. Cows that contract infection usually develop an immunity after some months. The disease appears to be widespread in Great Britain, and information concerning it is being collected at all centres. A limited number of observations have been made on the value of penicillin in the treatment of infected cows and bulls, but the results are difficult to assess, partly because

Results of Treatment with Penicillin of Mastitis caused by *Streptococcus agalactiae*

Method of milking	Original position			After one year			After 18 months		
	Total No. of cows	No. infected	Percentage infected	Total No. of cows	No. infected	Percentage infected	Total No. of cows	No. infected	Percentage infected
Machine only (9 herds)	244	47	19·5	207	4	2	220	2	1
Machine plus hand stripping (10 herds)	291	68	23·4	281	17	6	274	16	5·8
Hand (5 herds) ...	160	49	31	143*	11	7·7	146	12	8·2

Of these 24 herds, 16 have completed two years' treatment, and the results of these herds follow a similar pattern :

Method of milking	Original position			After one year			After 18 months		
	Total No. of cows	No. infected	Percentage infected	Total No. of cows	No. infected	Percentage infected	Total No. of cows	No. infected	Percentage infected
Machine only (5 herds)	112	23	20·5	103	1	1	102	—	—
Machine plus hand stripping (7 herds) ...	233	52	22·4	220	14	6·5	213	7	3·3
Hand (4 herds) ...	148	46	31	134*	11	8·2	130†	9	6·9

* One herd changed to machine milking during the year with improved results.
† A second herd changed to machine milking during the year with improved results.

of the natural immunity which the cows develop and partly because it is often difficult to check the service records on farms which are under observation. Critical experiments now in progress at the Veterinary Laboratory, Weybridge, have already contributed greatly to our knowledge of this disease.

Other problems being investigated intensively include the control of Johne's disease on a number of farms, with the help of the blood test devised by N. Hole at Weybridge; the studies of the epidemiology of salmonella infection of animals at several centres; and continued work on diseases of young calves, notably white scours and, later in life, parasitic gastro-enteritis.

SHEEP

Enzootic Abortion

A serious type of abortion has long been recognised in the border counties, and following the discovery by the Edinburgh workers that the disease was caused by a small organism belonging to the psittacosis lymphogranuloma group, a vaccine was quickly evolved and extensive field experiments were conducted, both in Scotland and northern England. Our own contribution to this, at Newcastle, can be summarised as follows:

	1951		1952	
	Vaccinated	Not vaccinated	Vaccinated	Not vaccinated
Total number of ewes	1,262	1,233	844	991
Total number of abortions (all types) ...	38	61	15	45
Percentage of abortions ...	3·0	5·0	1·6	4·5
Proportion of placentae found to be infected	15 out of 26 (57·7%)	36 out of 41 (87·8%)	5 out of 10 (50%)	24 out of 27 (89·6%)
Hence, estimated number of infectious abortions	22	54	8	40
Estimated percentage of infectious abortions	1·7	4·4	0·8	4·0

Notes 1. Ewes were vaccinated for the first time in 1950.
2. No gimmers are included in the figures for 1952 as they were vaccinated for the first time only in autumn, 1951.

These results show that the incidence of enzootic abortion is reduced in the first pregnancy following vaccination, and that the effect is even more pronounced in the second pregnancy after vaccination. This agrees the results of similar experiments in Scotland.

Enzootic abortion has been confirmed in the last two years in some of the midland and south-western counties, but in these areas the disease crops up only sporadically, often as a result of importation of infected sheep, and it is by no means as serious as it is in the northern counties.

Pulpy Kidney Disease

Pulpy kidney disease is widespread and affects sheep of all ages and at all times of the year. It is probable, however, that the highest mortalities occur in spring, with the first flush of grass, and in autumn or early winter, when lowland sheep move from grass to root crops. That diet has an influence on the incidence of the disease is well established, but the exact rôle the diet plays is still unknown. The organism responsible, *Cl. welchii*, Type D, is one of a group which has been extensively studied, and effective serum and vaccine have both been manufactured. Consideration has had to be given to the best way to use these products. It is known that the administration of serum will immediately cut short an outbreak of pulpy kidney disease—but is it possible to confer a long-lasting immunity on the sheep? Trials involving over 2,000 sheep, using serum alone, serum and vaccine, and vaccine alone, have been carried out at Newcastle. In this preliminary work, serum and vaccine, and vaccine alone, appeared to be of equal value and were much more effective than serum alone. A modified vaccine, which it is hoped will stimulate a greater immunity, is being tested further in the field.

Other conditions affecting the sheep and becoming increasingly serious hazards are enzootic pneumonia and the metabolic disorders, such as hypomagnesaemia and hypocalcaemia. The aetiology of all these conditions is obscure and they have been subjects of preliminary investigations at several centres. Trials on the effects of cobalt deficiency have also been conducted in Herefordshire and Worcestershire.

PIGS

While pig diseases of bacterial origin are relatively few—swine erysipelas being the classic example—losses from other causes have been fairly serious. Cases of bowel oedema have occurred throughout the country, but investigations made from the various veterinary investigation centres have failed to establish common factors relating to outbreaks which may form the basis for fundamental research into the problem. It appears to occur under all conditions of management and feeding. Workers in Ireland have reproduced the disease by inoculating experimental pigs with intestinal contents from typical cases, and this work has been confirmed in England, but the cause of the disease and specific therapy for prevention of treatment have not so far been evolved.

Investigations have been made into losses among very young piglets. In most cases litters have been normal at birth, but within 12 or 24 hours the piglets have become sleepy and dull, lapsing into a deep coma followed by death. In many of the piglets there is a low blood sugar, and the administration of glucose in the early stages sometimes brings about recovery. Others respond temporarily and then relapse. Deaths in piglets four to five days old have also been common and the possibility of bacterial infection has been ruled out. These losses may be associated with management, but up to the present the exact cause has not been ascertained.

A severe dermatitis of piglets has been encountered. This responds almost miraculously to treatment with yeast products. Other conditions affecting pigs which have been studied include virus pneumonia and necrotic enteritis.

POULTRY

All the veterinary investigation centres undertake blood testing of flocks outside the Accredited Scheme for the control of pullorum disease. In the course of routine *post-mortem* examination for the diagnosis of common ailments (coccidiosis, lymphomatosis, etc.), more serious infections, such as fowl typhoid and infectious laryngotracheitis, are sometimes encountered. In the last few years there has

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FREE FATTY ACIDS AND RANCIDITY IN POULTRY FEEDING-STUFFS

BY

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NAIROBI, KENYA

The rôle of fats and other constituents of the "ether extract," as expressed in conventional analysis, in the diet of poultry has been reviewed by Ewing (1951, pp. 469-483), who cites the relevant references to work on this subject. The non-drying oils commonly found in feeding-stuffs are susceptible to the presence of moisture and lipases and yield glycerol and fatty acids in the free state. These free fatty acids are susceptible to the oxidative effect of air and light and form compounds that cause rancidity. Although, as Ewing emphasises, rancidity and "free fatty acids" are not synonymous terms, an estimation of the free fatty acid content of the total ether of a foodstuff is nevertheless a valuable indication of the changes that have occurred during storage and of the liability of the product to oxidative rancidity. The development of rancidity is coincident with the destruction of many valuable nutritive substances (including carotene, vitamins A, D and E and biotin) and the feeding of rancid food to poultry may have harmful effects.

In Nairobi, where a mean average temperature for the year of about 70°F. is common, free fatty acid formation and then subsequent oxidation can take place very rapidly under certain conditions. Grain and cassava root should be stored with a maximum moisture content of 12 to 13 per cent., whilst oil cakes and fish meal should contain not more than 10 per cent. moisture for best preservation. These raw materials, wheat by-products and the other miscellaneous items frequently used in compound feeding-stuffs, should be kept in a well-insulated storage and every effort should also be made to ensure a good rotation of stocks, so that materials are kept in storage for a minimum period.

A survey of raw materials was carried out in November, 1952, in Nairobi with results as expressed below. The free fatty acid content was estimated in the usual way, *i.e.*, by titration of a weighed amount of the ether extract, taken up in alcohol, against N/10 NaOH, the results being expressed in terms of oleic acid and as a percentage of the total ether extract of the feeding-stuff.

TABLE I

Sample	Oil content (ether extract)	% Free fatty acid (of E.E.)
Fish Meal (South African, White, fresh production)	4·9	11·6
Yellow Maize (stored 18 months) ...	5·4	9·9
Linseed Cake (Kenya—fresh)	15·2	11·7
Ground Nut Cake (Uganda—stored six months)	9·2	7·5
Meat Meal (Tanganyika—fresh)	8·2	4·7
Meat and Bone Meal (Kenya—stored six months)	13·7	59·7*
Pollard (Kenya, 75 per cent. extraction—freshly milled)	3·3	4·9
Bran (Kenya—stored four months) .	2·7	36·3*
Cassava (Tanganyika—stored 18 months)	0·38	41·1*
Bulrush Millet (Kenya—stored 18 months)	3·04	32·0*
Barley (Kenya—stored 12 months).	1·6	28·0*
Lucerne (Kenya, sun-dried—stored eight months)	1·5	20·6
Fish Meal (Red Sea—stored 18 months)	4·2	55·7*

* Evidence of rancidity.

From the results of this survey it may be seen that materials can deteriorate, and in practice it has been found that a high free fatty acid content of a feeding-stuff has been indicative of rancidity.

DETERIORATION OF COMPOUNDS

Very often no fewer than 20 items are used in the construction of a balanced compound feeding-stuff and a glance at Table I will indicate the storage quality of the various raw materials that might be included. Any one of those showing evidence of rancidity could introduce the conditions necessary for the rapid oxidative destruction of nutritive essentials already described. Indeed in practice it was found that chick mash containing only 5 per cent. of Red Sea fish meal developed in one week a free fatty acid content of 70 per cent. of the total ether extract. When this fish meal was replaced by the same quantity of freshly produced fish meal, the ether extract of the resultant mash after one week showed a free fatty acid content of only 4·5 per cent.

As has already been indicated, a poultry mash that appears to all intents and purposes in good condition may have some rancidity and when fed can have disastrous results. Chicks are extremely susceptible to a rancid mash and 100 per cent. losses are common from birds fed on such material. Unless they have prior knowledge of rancidity, veterinary laboratories when examining such chicks invariably report no evidence of bacteriological disease; sometimes symptoms of chilling, but generally make mention of evidence of acute digestive disorders and often suggest poisoning. It is almost impossible to make a proper diagnosis without a full history of the case and a chemical analysis. During the latter part of last year a consignment of chick mash was sent to various parts of Kenya, and from evidence available since gathered, appeared to develop some rancidity shortly after leaving the mill. Reports were received of heavy losses; detailed descriptions of crazy-chick disease (nutritional encephalomalacia) and rickets were given. Specimens of live chicks received had accumulated large lumps of soapy mash on their upper beaks, were cross-beaked and suffering from rickets. When chicks in similar condition were given normal

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been an increase in fowl typhoid, and investigations have been conducted at Aberystwyth and Bangor. An extensive programme of work on the epidemiology of fowl typhoid is at present going on in the East Riding of Yorkshire, where 69 outbreaks are known to have occurred in 1952. The organism recovered from many cases is unusually virulent, and viability and survival experiments are in progress. Vaccination and/or treatment trials have been planned.

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It is hoped that these brief notes will provide some idea of the diversity of the work conducted at veterinary investigation centres. The results of the routine examinations are embodied in reports to veterinary surgeons and poultry-farmers, but a much more complete record of many of the research projects mentioned above can be found in the scientific literature.

chick mash they quickly recovered their virility, but the deformity remained. There would appear to be no doubt that rancid mash is responsible in chicks for acute digestive disorders, a very much lowered food intake, deficiencies of vitamin A, D and E, and death due to multiple causes. Where chicks had not been fed for any length of time on the rancid mash, a change of food brought about a complete recovery within 10 days.

Heavy losses can also occur in growing poultry and symptoms are very similar to those described for chicks. Growing birds in cages develop ruffled and mis-shaped feathers, grow very slowly and survivors show unmistakable signs of rickets. This is especially apparent in pure or first crosses of Light Sussex, when melanotic pigment appears in the feathering.

Some deaths may occur in adult birds, but the heaviest loss occurs in egg production. This can fall from 70 per cent. to as low as 30 per cent. very quickly, whilst shell texture and egg size are also affected. Symptoms of vitamin D_3 deficiency occur in hen batteries very rapidly, production falls and of the eggs laid a large percentage of them are thin-shelled or shell-less. A number of birds develop leg weakness and *post-mortem* examination reveals clearly defined osteomalacia. Normal health and production is restored in about two weeks after replacing the rancid food with a normal well-balanced intensive mash.

Fat deterioration in the raw materials used in the preparation of poultry foods can lead to serious losses. It can be avoided by careful selection of raw materials and their satisfactory storage and by rotation of stocks to minimise length of storage. From a veterinary point of view it would appear that when an investigation of poultry losses is necessary, in the absence of evidence of bacteriological disease, in circumstances as described, it is desirable to obtain evidence of the free fatty acid content of the ether extract of the food involved.

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HORSE RIDING IN EPPING FOREST

RESTRICTIONS UPHELD

At a recent hearing Stratford Magistrates, rejecting submissions that the by-laws controlling horse riding in Epping Forest were unsupportable in law because the powers of the Conservators did not permit them to control horse riding but only horse racing, fined Miss Elsie Ada James, a nurse, of Brookland Nursing Home, Fairlop Road, Leytonstone, £3 on each of two summonses for riding a horse in a part of the forest where horse riding was not permitted. Twenty-eight days was allowed for payment of the fines.

Thomas McGrath, a forest keeper, said that he saw Miss James riding in the centre of the Hollow Pond boating lake and told her horses were not permitted there. She replied: "If you want me come and get me" and rode farther into the pond, across to an island. Subsequently he saw her riding along a footpath. Both pond and footpath were prohibited to horses.

Miss James, in the witness box, agreed that she had ridden as stated. She wanted to cool her horse's legs as it was a hot day. It was impossible to ride in the forest without riding over footpaths. There were horse tracks, but riders hardly dare take their horses on them because of the condition they were in. She agreed she had sent a protest to the Conservators regarding the horse rides, accompanied by a petition, and had received a reply that it would be considered in October.

Mr. Ibbotson, who appeared for Miss James, said there would be an appeal.

THE VETERINARY RECORD

SEPTEMBER 5TH, 1953

SLAUGHTER OF HORSES

ALL things which affect the welfare of horses are of particular concern to the veterinary profession and the report of the Committee of Enquiry into the Slaughter of Horses, which was published recently, will be studied with interest. This committee was appointed "to consider the Law and Practice thereunder relating to the slaughter of horses in slaughterhouses and knackers' yards and to recommend whether any further safeguards should be introduced to ensure the humane slaughter of horses in this country."

Horse meat has never been popular in Great Britain and there can be little doubt that the shortage of other kinds of meat, during and after World War II, was largely responsible for the increased demand in recent years. Present indications are that the demand is decreasing and will continue to decrease as larger supplies of other meat become available; nevertheless, it is reasonable to assume that some demand for horse meat will continue, and there will be general agreement with the recommendations of the committee to ensure that the business of slaughtering horses for food is carried on as humanely as possible. With the statement that the risk of cruelty to horses is not so much a matter of the actual method and act of slaughter, but of the arrangements for transport, handling, lairage and feeding and watering we would agree, and it is mainly to these aspects of the trade that attention has been directed. After careful consideration of all the evidence, the committee doubts very much whether horses are slaughtered otherwise than by a gun of one type or another, but despite this assertion it is noted from the report that at one slaughterhouse visited by members there was a pole-axe available which showed evidence of recent use. The licensing of slaughtermen specially for the slaughter of horses, and requiring the licence holder to use a specific type of weapon, together with the stricter supervision proposed, should assist materially in preventing abuses.

The committee recognises that matters concerning the prevention of cruelty and the maintenance of conditions which will ensure that horses are handled and slaughtered in a humane manner come within the province of the veterinary surgeon, and the recommendation that the veterinary staff of the Ministry of Agriculture and Fisheries be given powers of entry and authority to visit slaughterhouses and lairages for the purpose of advising local authority officials on these matters will be welcome.

The recommendation referring to the granting of probationary licences is a new departure. It is proposed that a probationary licence be issued to a person not entitled to a full licence on the condition that the holder shall not slaughter horses except under the supervision of a holder of a full licence. This is a sound and humane proposal and on humane grounds there is no reason why it should not apply to slaughtermen concerned with the slaughter of other animals.

The question whether a horse recognises carcases and offal as the remains of his fellow creatures and as an intimation of his own impending doom, remains undecided. This is an academic point which may never be solved and so we would support the recommendation that it be made an offence to slaughter a horse in any place where there is another horse or the remains of a horse, and that new

slaughterhouses be provided with a separate room or bay where slaughter can be carried out.

The recommendations regarding the licensing of slaughterhouses, including lairages used for the confinement of horses awaiting slaughter, if adopted, should remove some of the main objectionable features of this trade; and the prescribing by regulation, by a Government department, of minimum standards of construction and equipment of slaughterhouses and lairages seems most desirable. Whether the Ministry of Food, with its somewhat uncertain future, is the right department for exercising this function, is open to question; but it is noted that the committee recommends that the Ministry of Agriculture and Fisheries be consulted when such regulations are being drafted.

The majority probably will agree with the suggestion that it be made illegal for anyone to transport a live horse to, or to accept one at, a knacker's yard, and that the Slaughter of Animals Act and the Protection of Animals Act be amended accordingly.

Some of the ground covered by this committee had been examined previously by the Rosebery Committee appointed in 1949 and, generally speaking, their findings are in agreement. This committee's findings differ in one important respect. It does not endorse the view that the long-term solution of the general problem of the slaughter of horses should be to restrict slaughter to Government-controlled slaughterhouses. Its report favours the more practical course of endeavouring to secure proper standards at all slaughterhouses whether privately or publicly owned.

The information given in this report, and the recommendations—summarised in some 23 paragraphs—if adopted, should allay greatly the anxiety felt by sections of the public concerning the business of slaughtering horses for food.

"A PERAMBULATION OF PAEDIATRICIANS"

One of the "Peripatetic Correspondents" to *The Lancet* contributes the following to a recent issue of that journal:—

"A *perambulation* of paediatricians seems an apt collective noun, though we were by no means pushed around when members of the local paediatric club inspected a veterinary research unit last Saturday afternoon. Indeed, we were so interested that we abandoned the toddler's gait customary on these occasions, and fairly gambolled round the laboratories and grounds.

"The magnificent bulls for artificial insemination attracted most attention. Lest we should imagine, however, that there are no problems in the bovine Welfare State, we were told of difficulties which do arise. For instance, spermatozoa whose ardour has been cooled during months of frustration in the ice-chest sometimes take it on themselves to go backward *au moment critique*.

"Vets. vie with even the most recently fledged paediatricians in 'cubicilisation,' and they are far in advance of obstetricians in their devotion to the ante-natal care of fathers, a prospect which produced envious comment from the males in our party—and some wholly male paediatricians do, somewhat anachronistically, persist.

"What would an older generation have thought of the fact that we saw not a single horse during our visit? We did, however, see three dogs, though they were visitors and not inmates. We were also informed that when Dartmoor ponies are turned loose in lush grass they tend to develop dermatitis, owing to the unaccustomed high level of chlorophyll in their diet. Clearly we shall have to watch those children who use the modern, widely advertised toothpastes.

"In the museum two exhibits astonished us. One was an example of osteopetrosis, which was casually attributed to virus infection; the other, a specimen of muscular dystrophy, which is regularly cured with methylene-blue. On Monday morning I expect to see a crowd of would-be therapeutists in the records department of the children's hospital, anxiously looking up names and addresses in the diagnostic index of patients."

ABSTRACTS

Haemolytic Icterus of Newborn Foals*

The severity of haemolytic icterus in foals was related both to the antibody titre of the serum and colostrum of the dams and to the amount of colostrum secreted. The serum and colostrum of some mares contained haemagglutinin and haemolysin, whilst that of other mares contained haemagglutinin only. The foals of mares with a serum haemolysin titre of 1 : 100 to 1 : 1,000 usually developed severe haemoglobinaemia and haemoglobinuria; whereas the foals of mares having serum haemagglutinin titres of 1 : 16 and above, but serum haemolysin titres of less than 1 : 10, commonly developed a severe anaemia without haemoglobinuria. Marked cases of icterus occurred in foals suckling mares secreting low titre colostrum, and conversely some mild cases were observed in foals from mares with high serum titres. This variation was thought to be due to the relative amounts of colostrum secreted by different mares. Thus the removal of 4 to 6 pints of colostrum by hand milking during a four- to six-hour period was sufficient to eliminate antibody in some mares, but in others it was necessary to remove 8 to 10 pints or more during a period of 12 to 24 hours to achieve this result.

The ages of 32 mares at the time they produced their first jaundiced foal varied from 6 to 22 years, and 31 per cent. of these foals were second or third pregnancy offspring. No case has been known to result from a first pregnancy.

In uncomplicated cases, foals appeared healthy at birth and nursed strongly. From 12 to 24 hours after birth some foals became weak, dull and nursed infrequently and for short intervals only. The mucous membranes were pallid. The heart rate and the frequency and depth of respiration were markedly increased. Erythrocyte counts ranged from 2·2 to 3·6 $\times$ 10^6 per cu. mm. Icterus was slight or absent during the first 24 hours, but usually appeared on the second day. Haemoglobinuria was seldom present before the second or third day. In some cases symptoms did not develop until the third or fourth day, and some mild non-fatal cases which showed no clinical symptoms other than anaemia and icterus were recognised.

Except for anaemia and jaundice, few characteristic gross lesions were found at autopsy. Splenomegaly was present in foals dying under 48 hours old. Histopathological examinations revealed degenerative changes in the liver, kidney and myocardium, which were more marked as the age of the foal increased. The severe anaemia seen in those foals in which intravascular haemolysis did not occur was thought to be due to the separation and destruction of sensitised erythrocytes from the circulation by the spleen.

Early and extensive exsanguination transfusion resulted in fewer deaths and more rapid recovery than did a smaller exsanguination transfusion or periodic simple transfusions over a period of several days. For a severely affected foal with an erythrocyte count below 3 $\times$ 10^6 per cu. mm., the infusion of 4 to 6 litres of fresh citrated blood and the removal of 3 to 5 litres of blood was adequate. A differential of 1 litre excess in the amount of blood infused was tolerated satisfactorily.

T. W. F. P.

* **Observations on the Clinical Features and Pathology of Haemolytic Icterus of Newborn Foals.** Dall, E. R. (1952). *Amer. J. vet. Res.* **13.** 504–508.

Antibiotics in the Treatment of Low Fertility Cows*

These studies were made on 57 cows (37 Friesians and 20 Guernseys). The animals had to meet the following criteria before they were included in the trials.

1. A minimum of four infertile services since last calving with a heat period since last breeding.
2. A minimum of one calving, but not over 10 years of age.
3. Not more than two experimental cows from any one farm, and
4. Show no visual evidence of infection such as a purulent discharge or other abnormalities detected upon manual palpation *per rectum*.

Alternate cows to show oestrus were allotted to "treatment" and "no treatment" groups respectively. The cows were examined twice daily for signs of oestrus, and breeding was by intra-cervical insemination.

Treatment consisted of a mixture of 0·25 gramme aureomycin hydrochloride, 1 gramme dihydrostreptomycin and 100,000 units of crystalline penicillin in 125 ml. of sterile distilled water, introduced by gravity through the uterine cervix.

The effect of this mixture was tested at two different times during the oestrous cycle. Seven cows were treated 17 days after the beginning of heat, leaving six cows untreated. Sixteen cows were treated as soon as they were noticed in heat, and inseminated 12 hours later; there were 19 control animals to this group.

All cows which returned to oestrus after the first breeding were re-bred. Those animals that had not returned to oestrus by 34 days after breeding were slaughtered and examined for the presence of normal embryos. On this basis the percentage of cows with normal embryos in the treated group was 34·8 and in the untreated group it was 56; with the number of cows involved this difference was not statistically significant. The use of antibiotics during the luteal phase of the oestrous cycle caused some endometrial inflammation. The importance of having control groups of animals in such studies is emphasised. [It should be noted that the authors make no claims that *Vibrio foetus* infections were included in their material.—*Abstractor.*]

D. L. H.

* **The Use of Antibiotics in the Treatment of Low Fertility Cows.** Ulberg, L. C., Black, W. G., Kidder, H. E., McDonald, L. E., Casida, L. E., & McNutt, S. H. (1952). *J. Amer. vet. med. Ass.* **121.** 436.

LEGAL NOTES

Detergents in Stream Alleged to Cause Cow's Death.—A Sedgley farmer, Mr. T. E. Pugh, of Lower Gospel End Farm, claims that the death of his cow, a pedigree, valued at 100 guineas, was due to the animal drinking from a stream which was polluted by detergents from the Council's cleansing works. Mr. Pugh (says the *Dudley Herald*) has lodged a claim for the value of the animal on the Council.

"A spokesman from the engineer and surveyor's department thought that the claim would be brought before the Council at a meeting.

"According to a veterinary surgeon the actual cause of death was peritonitis. Sedgley's surveyor (Mr. W. M. Jones) said he had been told that it was impossible for an animal to get peritonitis by drinking such water. Sewage outflow into the brook was intentional and had existed for a long time, as survey drawing showed."

* * * * *

A live wire erected to control a restive bull caused the death of a Caithness smallholder. Donald Farquhar, aged 42, of Orlmie, near Thurso, had a bull which often broke loose from its stall, and to keep it in Farquhar fitted a loose wire connected to the electric light. He was found lying dead across the threshold of the byre, and burns on one of his hands indicated that he had grasped the wire and had been killed.

THE XVTH INTERNATIONAL VETERINARY CONGRESS

SOME MORE IMPRESSIONS

We were in the Blue Room of the Stockholm Town Hall. "Do a bit for the *Record*," he said. "You know, about this Congress, but make it humorous; no heavy scientific stuff, we've got other people covering that." I wasn't feeling very humorous at the time but I said I'd try because at heart I'm really a very helpful sort of chap.

But now that the Congress is over I rather wish I had not seemed so co-operative. It's all very well being the funny man at the party but next morning isn't so good—and now it's next morning.

I have thought back over the whole thing pretty carefully and to my dismay I can't really recall anything funny about it at all: in fact, quite the reverse. Everyone seemed very serious, obviously intent on following the devious paths of international veterinary science, if not always with full understanding, certainly with scrupulous correctness. So much heel-clicking and bowing made one think that at any moment the duelling sabres would be unsheathed and dire deeds done. One couldn't even have a drink without first lifting the brimming glass to eye level and murmuring seductively "Skal." Incidentally, rigid observance of this ancient if somewhat absurd custom can have disastrous consequences after a heavy night. A Swedish friend, well versed in these matters, gave me a useful tip for such occasions. He warned me that unless the hand is rock-steady and the eyesight good one should never "Skal" from the lateral position. If one does there is the grave danger that some "snaps" will inadvertently be slopped over and fall with irritating precision into the auditory meatus of the operator. This ticklish situation is guaranteed to cause amusement to the bystanders but has few risory effects on the startled recipient. So during the morning after he recommends that one should "Skal" instead from the frontal position, first steadying the glass, if necessary, on the bridge of the nose or on a convenient eyebrow. Then at worst any "snaps" which spills will only act as a collyrium and, although there may be some interference with vision for a day or two, there will be at least the consolation of hearing what is going on around.

But perhaps I am moving too fast for you. I should really, I suppose, have started at the beginning. For some that beginning was an airport, for others a long road to be covered by car or other means of transport—I met a man in Stockholm who was wearing a kilt and had actually travelled there by London taxi cab but he wasn't a veterinarian and I can't believe that he was a genuine Scotsman; I'm sure that if he was he would never have survived the torment of the clock ticking up sixpences through all the thousand miles to the "Paris of the North."

For our party the beginning was Tilbury and the Swedish-Lloyd boat *Patricia*. We arrived early, not because we have any special affection for Tilbury, but because the *Patricia* is famous for her Smörgasbord and other Swedish foods and we were anxious to tackle them. We met many of our friends on the quay and in the Customs shed who had similar ideas. We ate with restraint as we slid smoothly down the Thames, anticipating the joys of the morrow. But, alas, to-morrow never comes. At dawn *Patricia* rolled in heavy seas rearing and plunging in great walls of water. The veterinary contingent, accustomed to the motions of horse, camel and elephant alike, should, theoretically, have enjoyed the many strange and difficult motions but, sad to relate, it suffered with the rest. With due deference to all who travelled by

other routes it might be said that on this dark day the very flower of the veterinary profession was laid low. True, some hardy few survived, clinging precariously to their hastily swallowed breakfasts but their numbers dwindled as the long day wore on. At 11 p.m. only seven tough subjects remained at the bar, immune by that time to all that the seas or anything else could do. To record that all were veterinarians is the only bright spot of the day. Saddest cases of all, of course, were the Scotsmen who made up at least half of the number of the whole contingent. These unhappy people, having paid for all meals in advance, suffered not only the pangs of *mal de mer* but the acute mental anguish of much wasted expenditure.

But, you say, what of the Congress itself and its many diversions?

Well, we started off with a mammoth reception, one of those tea and cakes affairs designed to get people together and to mix them all thoroughly up. It was very well done but I always find such parties difficult, having repeatedly shown an unhappy knack of introducing foreign friends enthusiastically to anyone around and then finding I have got their names wrong. This can be very embarrassing especially when the original greetings have been full of brotherly expressions such as *mon cher ami* and it turns out that the gentleman really hails from Tooting. And on this occasion I had more than my usual quota of mistakes. Incidentally, there were four Russians who registered at the Congress and naturally we were all very keen to be introduced to them. But search as we did we never even saw them, nor in fact, so far as I am aware, did anyone else.

The Congress banquet, on the other hand, was a huge success. Never has so much food and drink been carried by so few and applauded by so many as on that memorable night. The banquet began as lights flashed on over 1,000 glasses of snaps carried high by waiters and waitresses on silver trays down the great staircase of the Stockholm Town Hall. It was a moving spectacle. One paused only for a moment to wonder what would have happened to the major domo at the foot of the stairway if one of the leading waiters had stumbled and he had received the full discharge of all the glasses. No doubt he would have died an honourable and happy death. Then there was dancing which produced some weird attempts at Swedish specialities and some surprisingly agile exponents of the samba. A gymnastics display, a final song or two—none of which appeared on the official programme—an abortive attempt to introduce "Cock Robin" brought to nought through the counter efforts of some Latin gentlemen, a final heel-click and bow all round, and at 2 a.m. the evening was over.

No doubt to cool brows that were aching from a surfeit of science, many of the British contingent went next day by boat to Saltsjobäden, a delightful spot about 10 miles outside Stockholm. Bathing was on the programme but the winds were a little chill and only two members—described by their colleagues as the whitest veterinarians in Sweden—actually immersed themselves. Several went so far as to enter the bathing enclosure but in the end contented themselves with buying chocolate and eating nuts.

For those who through language difficulties had had little variety in their diet for several days—even the knowledge that ägg is egg loses some of its value after you have had äggs for 10 consecutive meals—it was a relief to find that following a theatre party at the Royal residence at Drottingholm, supper was to be provided by the Swedish Farmers' Association. In such circumstances it was not surprising that the theatre was packed to capacity. The performance itself of opera and ballet was of a high order and of major interest, utilising as it did props and scenery which were nearly 200 years old. Not least among the performers was a bat which suddenly projected itself from amidst the ancient scenery and spent the rest of the evening winging in ever-decreasing circles over the heads of the audience. To the temporary relief of the ladies it anchored itself on a couple of occasions on the candelabra and looked out over the throng with a quizzical gaze, but it soon seemed to tire of this and resumed its swooping flight over actors and audience alike. And the supper? It, too, was quite a spectacle. Six hundred people standing up, close packed, and having a meal all at the same time is always a sight. Add to it long wine tables in the unlighted gardens, bonfires to heat water for the tea, and convenient statuary with their outstretched hands or crossed limbs obligingly holding plates of sandwiches and you have something quite unusual to remember.

Last but not least in this curious tale should be mentioned the garden party at the Royal Swedish Veterinary School. Our party really quite honestly went to see the School and the demonstrations which were being staged there, but it was hot and we were sticky and when one of the demonstrators told us that the main party from the Congress was having tea on the Director's lawn we hastened to join it. We had a lovely tea complete even to cigars and chocolates. We were photographed by the Press and in return gave an interview in which we let it be known in no uncertain terms that we were pleased to be there. Indeed, when we had finished we felt quite important. Next day we spent 30 öre on a copy of the *Svenska Dagbladet* and looked confidently for our photograph. It was there sure enough, showing all three of us in flattering likeness. The caption read "Garden Party given for Eminent Veterinarians." We hastened to obtain a translation of the things which had been said of us below. The write-up was very kind, indeed in glowing terms, but it wasn't about us and we only realised then that three other people should have been the centre-piece and not ourselves. We shouldn't have been at the party at all. Some day, perhaps, I shall write to the *Svenska Dagbladet* and put the whole thing right but at the moment I haven't the courage. And, of course, the cigar and the chocolates can never be recovered: they are already things of the past.

I would like to be able to say that the XVth International Veterinary Congress was an unqualified success, but it wouldn't be true. It had many great moments, not the least the presentation of diplomas by our own President R.C.V.S., and it had times of chaos and confusion which are perhaps inevitable on occasions such as this. But on the whole it was a happy and friendly affair and when the next "International" comes round wherever it may be I have no doubt we will be packing the bags again and sallying forth to renew acquaintances with our new friends from all the corners of the earth.

D. D. O.

Scientific Film Association Congress.—The seventh Congress of the International Scientific Film Association will be held in London from September 18th to 27th, under the patronage of the Duke of Edinburgh. The programme of the medical or other groups, together with further information, can be obtained from the Congress Secretariat, c/o The Scientific Film Association at 164, Shaftesbury Avenue, London, W.C.2 (until September 18th), and at the National Film Theatre, London, S.E.1 (after September 18th). Admission to Congress sessions and film shows can be obtained by purchasing an observer's ticket (price £1) from the Secretariat.

NOTES AND NEWS

Diary of Events

Sept. 6th—12th.—Seventy-first Annual General Meeting and Congress of the British Veterinary Association, at Aberdeen.

Sept. 10th.—Annual General Meeting and Dinner of the Royal Dick Alumnus Association at Aberdeen (The Northern Hotel), 6.30 for 7 p.m.

Sept. 10th.—Meeting of the Association of State Veterinary Officers, in the Music Hall, Aberdeen, 12 noon; luncheon 1 p.m.

Sept. 23rd.—Meeting of the Supplementary Veterinary Register Division, B.V.A., at the Wellcome Foundation Building, 183-193, Euston Road, London, N.W.1, 1.45 p.m.

Sept. 25th.—Annual General Meeting of the Veterinary Section of UFAW, at Westham House, Barford, Warwick, 2 p.m.

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Veterinary Surgeons and National Service

Enquiries are being received at Association Headquarters as to what is being done to take up with the appropriate authorities cases of hardship arising from the operation of the new regulations whereby veterinary students completing their normal course of studies during 1953 will be available for call-up.

As was intimated in our summary of the proceedings of the July meeting of Council (*Vet. Rec.* 65. 524) the Royal College of Veterinary Surgeons have written to the Ministry of Agriculture suggesting that a liaison committee should be set up, on similar lines to the committees operating for the medical and dental professions, to consider cases of genuine hardship; and have also suggested that the age of deferment (at present 26) be extended to 30, so that young men who had some particular job on hand could complete it before doing their national service.

These representations have had the full support of the Association and we would stress that, whether or not the proposed liaison committee is set up, all possible information relating to cases of hardship should be sent in to 36, Gordon Square, in order that the Association may be in a position to present it to the committee, or to make approaches elsewhere, as is in fact being done now, whenever a useful opportunity presents itself.

* * * * *

Recruitment, Training and Qualification of Sanitary Inspectors*

The main recommendations made by the Working Party are:—

That an Examination Board should be set up to supersede the present joint board of the Royal Sanitary Institute and the Sanitary Inspectors' Association; that a panel of paid examiners replace the present honorary Examination Board, and that the examinations should be conducted by a Board constituted as follows:—

Appointed by the Sanitary Inspectors' Association, 10 members; Society of Medical Officers of Health (3); Royal Sanitary Institute (1); Association of Principals of Technical Institutions (2); Institute of Municipal Engineers (1); Royal College of Veterinary Surgeons (1); local authorities (4); Minister of Health (2), of whom one must be associated with a university.

Provision is also made for non-voting liaison officers appointed by the Minister of Health and other Government departments. The Chairman is to be selected by the Minister of Health from among the members of the Board, which body would be known as the Public Health Inspectors Education Board.

A diploma in Public Health Inspection would be the basic qualification recognised by the Minister of Health for appointment as "public health inspector," which term would replace "sanitary inspector."

The Board would be required to approve courses of training and keep under review all questions relating to the recruitment, training and examination of sanitary inspectors. It would have its own secretary, but would delegate the administration of its examinations to some other body.

The provision of any examination, specially intended for sanitary inspectors, by any other body than the Board is to be discouraged.

Recommendations are made to simplify the present training in building construction and to bring it more into line with the actual requirements of the work involved, but to increase the scope of training in smoke abatement and the inspection of meat and other foods, so as to render unnecessary the present additional examinations in these subjects which are conducted by the Royal Sanitary Institute.

It is because of the greater prominence proposed to be given to meat inspection that a representative of the Royal College of Veterinary Surgeons is included in the proposals with regard to the new Examination Board.

Many of those who have experience of meat inspection will have grave doubts if it is necessary to extend the scope of the basic examination to include, in effect, the present "meat and other foods examination" of the R.S.I., having regard to the present trend to centralisation of slaughtering. Probably they will consider that meat inspection in abattoirs might well be performed by persons specifically trained for this work, leaving the wider field of food hygiene to the public health inspector who, having regard to the scope of his duties, cannot be expected to be a specialist in meat inspection, as such, whilst much of the training received by the public health inspector would be unjustifiable for one employed solely on routine meat inspection.

While welcoming the inclusion of the Royal College of Veterinary Surgeons in the proposals for the constitution of the new Board, one cannot but feel that the Royal Sanitary Institute has not received very generous treatment, having regard to its record of service in the cause of public health and especially to its long experience in the conduct of examinations, in conjunction with the Sanitary Inspectors' Association, and also independently for certificates in advanced knowledge of various aspects of public health work. In this it has been aided by examiners of high standing who have given their services voluntarily.

One feels that, with the exception, perhaps, of the absorption of the "smoke certificate" into the general diploma, the other well tried and valuable higher certificates should continue as separate entities. The uneconomical absorption of these undoubtedly valuable examinations into a basic examination means their withdrawal from a carefully dovetailed, and well tried, system of examinations in public health with the result that the remaining examinations will be more costly to conduct. The upsetting of an examination system which has worked satisfactorily for over half a century in the public health interest, and its substitution by one which must result in higher costs, if not to the sanitary inspector himself, then to the taxpayer or ratepayer, is surely a procedure of doubtful value.

H. E. B.

* Ministry of Health publication (H.M.S.O., 4s. 6d.). Report of Working Party.

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Use of Toxic Chemicals in Agriculture

As has been announced in recent issues, the Ministry of Agriculture and Fisheries has appointed a Working Party on Precautionary Measures against Toxic Chemicals used in Agriculture: Risks to Wild Life, with the following terms of reference:—

"To investigate the possible risks to the natural flora and fauna of the countryside from the use in agriculture of toxic substances, including the possible harmful effects for agriculture and fisheries, and to make recommendations."

The Ministry has asked the B.V.A. for any information in this connection which may be of use to the Working Party and the matter was briefly discussed by the Technical Development Committee at a recent meeting. As a first step it was decided to seek evidence from members through the columns of *The Veterinary Record* in order that a collated report may be prepared for submission to the Ministry at an early date.

Would any member with experiences to report, kindly do so to the General Secretary, B.V.A., 36, Gordon Square, London, W.C.1, as early as possible.

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PERSONAL

Forthcoming Marriage.—HESKETH—NEWLING.—The engagement is announced between William C. Hesketh, M.R.C.V.S., only son of Mr. and Mrs. W. O. Hesketh, of Winterbourne, Torquay, and Elizabeth Meredith Newling, only daughter of the late Mr. A. G. Newling and of Mrs. G. M. Newling, of The Grange, Babbacombe.

Marriages—CARTMELL—BINGHAM.—On August 22nd, 1953, at Winchcomb Parish Church, Gloucestershire, William Bamber Cartmell, B.V.Sc. (Liv.), M.R.C.V.S., only son of Mr. and Mrs. W. Cartmell, of Preston, and Joan Margaret Bingham, M.C.S.P., only daughter of the late Dr. and Mrs. C. A. Bingham, of Lytham St. Annes, and step-daughter of Mrs. M. Bingham, of Bognor Regis. Mr. R. D. Locke, B.V.Sc. (Liv.), M.R.C.V.S., was best man.

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STOCKMAN—STOCKWELL.—On August 8th, 1953, at Radlett Congregational Church, Captain Michael John Robertson Stockman, R.A.V.C., son of Mr. H. W. Stockman, C.B.E., and Mrs. Stockman, of Ealing, and Valerie Stockwell, B.Sc., M.R.C.V.S., younger daughter of Mr. and Mrs. A. J. Stockwell, of Radlett.

The best man was Mr. Charles Frank, M.R.C.V.S., and other members of the profession present were Miss Joan Joshua, F.R.C.V.S., Mr. and Mrs. W. G. A. Penhale, MS.R.C.V.S., and Mr. and Mrs. A. D. Cousens, MS.R.C.V.S.

Ministry's Veterinary Field Staff.—Mr. P. Baird, M.R.C.V.S., Divisional Veterinary Officer, will be in charge of the Port at Fishguard as from September 1st, 1953.

Mr. J. J. McLaren, B.Sc., M.R.C.V.S., Veterinary Officer, Welshpool, has been promoted to Divisional Veterinary Officer and will be stationed at Head Office on September 1st, 1953.

The following have been appointed to the permanent staff as Veterinary Officers and will be stationed as indicated: Mr. K. Campbell (Kirkwall), Mr. A. C. W. Fairhead, B.V.Sc., M.R.C.V.S. (Chelmsford), and Mr. J. Watson, B.Sc., M.R.C.V.S. (Newcastle upon Tyne).

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R.C.V.S. OBITUARY

THE LATE MR. R. M. DAVIDSON, B.Sc., M.R.C.V.S.

An Appreciation

"Bob" Davidson, whose death was recorded in your last issue, passed away on August 16th, 1953, in hospital after a short illness. This tragic news will bring sorrow to his many colleagues and friends in Lanarkshire and elsewhere who will recently remember him as a "blythe spirit" in the prime of life.

Those of us who have worked with him in the Ministry know how he loved his work and how he put everything he knew into each and every job which came his way.

Scrupulous fairness and honesty of purpose went with him hand in hand, and his hearty "hail fellow" greeting masked a shy retiring nature with a longing for peace and quiet which he seldom enjoyed.

The profession has lost a brilliant scholar and the Ministry an able administrator, whose life may be summed up as having been devoted to the loyal performance of his duties.

To his wife and son will be extended every sympathy.

I. A. G.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

ANTHRAX:

Ches.—Top House Farm, Overton Heath, Malpas (Aug. 27).
Salop.—Meriden Farm, The Cross, Ellesmere (Aug. 25).
Yorks.—Keldgate Manor, Keldgate, Beverley (Aug. 26).

FOWL PEST:

Kent.—Lydden Farm, Margate (Aug. 25).
Yorks.—Coates Yard, Halifax Road, Hipperholme, Halifax (Aug. 25).

SWINE FEVER:

Essex.—Pamree, Lodge Lane, Collier Row, Romford; Rectory Farm, Littlebury, Saffron Walden (Aug. 28).
Herts.—8, Bury Dell, Park Street, St. Albans (Aug. 28).
Kent.—Shootfields Farm, Sundbridge, Sevenoaks (Aug. 28).
Lanarks.—Neiliain Piggery, Moddiesburn (Aug. 28).
Warwicks.—153, Townsend Lane, Long Lawford, Rugby (Aug. 28).

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A survey of developments in 18 European countries, just published by FAO, notes that prices received last year by farmers changed relatively little once the general inflationary trend had been overcome; there has been, however, a big change in the relationship between crop and livestock prices: in recent years the crop prices have overtaken those of livestock products.

The Wellcome Centenary

VETERINARY RESEARCH ACTIVITIES OF THE FOUNDATION

We trust that, since the intimation given in our issue of July 11th of the opening of the commemorative exhibition to mark the centenary of the birth of Sir Henry Wellcome, many of our readers have taken the opportunity to visit this unique collection in Euston Road. The exhibits range from interesting relics of his early days in the United States to sections depicting the activities of some of the world-famous institutes which he established after he settled in Great Britain.

Foremost amongst these institutes, of course, in the degree of interest aroused amongst members of our profession, and very largely by the generously encouraged practice of veterinary society visitation, is that most recently established—the Veterinary Research Station at Frant, in Sussex. It is featured, with the photograph reproduced overleaf, in the section devoted to veterinary research, in the exhaustive and admirable study of the history and work of the Foundation published as a four-page supplement to the issue of *The Times* of Tuesday, August 25th. This section is so informative a review of the vast field of veterinary endeavour that stands to the credit of this great organisation that it is worthy of extensive quotation:—

"Another important advance in immunology was in the veterinary field. The Veterinary Superintendent, appointed in 1922 primarily to safeguard the health of the laboratory horses, was a young man named Dalling, now Sir Thomas Dalling. At that time, lamb dysentery had become a scourge of the great sheep-rearing area of the Border Counties, where in some flocks as many as half of the lambs died before they were 10 days old.

"Dalling had suspected that an organism which came into prominence as the chief cause of gas gangrene in war wounds, *Clostridium welchii*, played a part in producing lamb dysentery. He headed a research team which made a surprising discovery. While the strain isolated from dead lambs in many ways behaved like the gas gangrene organism, it was in fact a previously unknown variety of the microbe which killed the lamb by producing a different toxin. This work led to the recognition by outside workers of a whole series of varieties, concerned with other sheep diseases, and labelled Types A, B, C, D and E. Vaccines (killed bacteria) and antitoxins have been prepared for the prevention of all types (except E, which is rare), as well as antitoxins for treatment. The work on immunity already described was of great assistance in the development of these products. . . . The annual number of deaths from lamb dysentery in areas where immunisation is practised—and that is nearly everywhere—has been reduced from tens of thousands to almost nil, with great economic gain. Pulpy kidney, another disease of sheep due to Type D, has also been controlled. But that is not the end of the story, for there have been repercussions on human medicine. Glenny, and later his successor, Professor C. L. Oakley, took up the examination of the toxins produced by a whole group of organisms related to *Clostridium welchii* which are infective to men or animals, and the laboratories are now widely recognised as a centre of authority on these microbes, and cultures arrive from all over the world for examination and identification.

"Another important advance in the veterinary field was the discovery by Dalling and Professor C. C. Okell that the disease known as 'yellows' in dogs was due to *Leptospira haemorrhagicae;* this led to methods of prevention and treatment. This microbe also infects man, especially sewermen and men who gut fish. The first human case in this country was diagnosed by Dr. Wenyon and Dr. J. C. Broom, the latter is now working at the Laboratories of Tropical Medicine, and recognised all over the world as an outstanding authority on this disease.

"Virus diseases of various types have been investigated in the Wellcome research units. The most extensive work has been carried out on yellow fever (which is dealt with in the section on tropical medicine), canine distemper, hard-pad disease, and feline enteritis. The method of prevention of canine distemper was first worked out by Sir Patrick Laidlaw and Major G. W. Dunkin in the Medical Research Council Laboratories for *The Field* Distemper Fund. The development of methods for ensuring that the unstable virus-vaccine reached the consumer in an active form was a major undertaking of Dalling and A. B. MacIntyre at the Beckenham laboratories. It is of interest that this was the first commercial product ever issued in the freeze-dried state, the technique for which was developed by Dr. Pope. Of late classical canine distemper has almost disappeared, probably as the result of extensive immunisation, but trouble has been caused by a virus, probably a modified canine distemper virus, which was separated by MacIntyre and Dr. D. J. Trevan, who called it 'hard pad' disease. Feline enteritis, a fatal virus disease of cats, has been studied for many years, and a protective vaccine is available."

The Research Station at Frant

Descriptions of researches into pharmacology, chemistry and the new antibiotics precede the following references to the Foundation's Veterinary Research Station:—

"In the investigation of animal disease, and in the preparation and testing of biological products for the treatment and prevention of infections of man and animals, it is essential to use healthy animals which have been bred and reared in a disease-free environment. To provide facilities for this animal breeding, the Wellcome Veterinary Research Station was established, under the direction of Dr. R. E. Montgomerie, at Ely Grange, Frant, Sussex, in 1943. There, under ideal conditions and expert care, guinea-pigs, hamsters, mice, ferrets and dogs are reared.

"To round off veterinary investigations begun on the laboratory bench, it is often necessary to verify tentative conclusions by observations requiring the use of farm animals. The Station at Frant maintains groups of healthy animals whose history from birth has been recorded in detail, so that any response in tests is clearly defined. Here, veterinary prophylactics and therapeutic remedies pass their final tests before they are issued for use in the field.

"The Station contributes its quota of research work. The prevention of certain diseases of sheep, notably louping-ill and contagious pustular dermatitis—both virus diseases, the one transmitted by ticks and the other by contact—is under constant study. The disease problems of the dairy-herd have occupied much of the attention of the resident veterinary surgeon, S. L. Hignett, and his staff, whose work on infertility, especially in relation to diet, has earned world-wide recognition. Hignett, who in this sphere enjoys an international reputation, has travelled to Argentina and to the Caribbean to lend a hand in the solution of breeding problems among local cattle."

As has been so well said by *The Pharmaceutical Journal*: "Wellcome was a man of many interests, but they tended in one direction. In his younger days he had been a great traveller; tropical diseases were almost a hobby with him. He was a student of history and so he built up the unique medical museum and library which bear his name. He was a keen business man, but if he enriched himself, he also enriched humanity. He was not, in the generally accepted sense of the word, a philanthropist, yet he saw to it that after his death his wealth should continue to be used as he himself had used it during his lifetime, in the pursuit of medical knowledge and so to the ultimate benefit of mankind. It is fitting, therefore, that the centenary of his birth should be commemorated by the exhibition now on view at the Wellcome Research Institution."

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Weekly Wisdom

An institution is the lengthened shadow of one man.

WORLD CONFERENCE ON MEDICAL EDUCATION

The first world conference on medical education held in London from August 22nd to 29th, was attended by more than 450 doctors and teachers from nearly 40 countries. The conference, which was arranged under the auspices of the World Medical Association in collaboration with the World Health Organisation, was presided over by Sir Lionel Whitby, Vice-Chancellor of Cambridge University. Its object, in the words of the President, was: "To provide an opportunity for the interchange of thought and experience by the doctors of many lands so that we can shape the future development of undergraduate medical education." The work of the conference was arranged as two plenary sessions and four sections, as follows: (*a*) Requirements for entry into medical schools, (*b*) aims and content of the medical curriculum, (*c*) techniques and methods of medical education, (*d*) preventive and social medicine.

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UFAW SUMMER SCHOOL

The Universities Federation for Animal Welfare is holding a summer school during September 19th to 26th at Westham House, Barford, Warwick. The school will consist of a number of lectures on various aspects of animal welfare, together with films, excursions, etc.; at the same time the Veterinary Section of the Federation will be holding its annual general meeting. The fee for the course is five guineas (three guineas for students). Further details can be obtained from any branch secretary of the Federation, or from Miss M. P. Williams, Branch Organiser, UFAW, 7, Red Lion Square, London, W.C.1.

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CHILLINGHAM WILD CATTLE

At the annual meeting of the Wild Cattle Association report was made that the state of the Chillingham herd is unchanged from last year at 15, made up of two old bulls, a two-year-old and a yearling and 11 cows and heifers. The Earl of Tankerville revealed that the eight-year-old "King bull" of Britain's only remaining wild cattle herd, which has roamed the pastures of Chillingham, near Wooler, Northumberland, for 700 years, has killed his heir apparent in combat.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

THE DOSING OF WARBLE-INFESTED CATTLE WITH ANTHELMINTICS

Sir,—The report of the 1953 annual conference of the International Hide and Allied Trades Improvement Society, published in your issue of August 29th (*Vet. Rec.* **65**. 572) mentions the

preliminary dosing trials with an anthelmintic preparation that were carried out in this country during the winter of 1952-53, with surprisingly encouraging results.

As Spence has mentioned (see *Chem. and Ind.*, 1953, p. 651), there have been previous suggestions that phenothiazine may exert some action on warble larvae during their migration through the tissues, and at the request of Mr. Roger Withinshaw, President of the International Society, a pilot experiment was carried out on two herds with a known history of warble infestation and records of "gadding" during apparent exposure to infection during the 1952 grazing season. The preparation employed had a wider range of anthelmintic action than phenothiazine alone, and contained hexachlorethane and an organic tin compound in addition.

The dosing was carried out at two farms. On the first, in the West country, 139 animals (29 first-year heifers, 25 second-year heifers and 85 mature cows) were dosed at the beginning of December, 1952, and again at the beginning of January, the beginning of February and at the middle of March, while 74 animals (17 first-year heifers, 11 second-year heifers and 46 mature cows) were left as untreated controls. On the second farm, in Oxfordshire, 28 of 51 heifers which had been between 6 and 18 months of age when turned out to grass together in May, 1952, were dosed in mid-January, 1953, and again early in March. The remaining 23 were left as untreated controls. The efficacy of the anthelmintic preparations as such was checked by means of faecal worm-egg counts.

On both farms the degree of warble infestation up to the last examination late in July, 1953, has been markedly different among dosed and undosed animals. None of the 167 dosed animals has shown a single warble "lump." On the first farm, all 74 undosed animals have been found to develop mature larvae, the individual counts ranging from 8 to 42. On the second farm, nine of the 23 undosed controls have remained free from mature larvae, but the remaining 14 have all harboured them, the individual counts ranging from 1 to 28. Only *Hypoderma lineatum* has been identified, although on the second farm it is believed that *H. bovis* infestation has occurred during previous years.

Quite as impressive as the absence of warble infestation was the marked superiority in condition of the dosed cattle. This alone would have justified the trouble and expense of dosing.

It is, of course, unwise to draw any but tentative conclusions from a pilot experiment of this nature, but the results are regarded as sufficiently encouraging to warrant the promotion of large-scale trials during the coming winter and the co-operation of individual members of the veterinary profession would be welcomed. I am grateful to the Hide and Allied Trades Improvement Society for making these observations possible, to Messrs. Walter Gregory and Co., Animal Husbandry Products, Wellington, Somerset, for supplies of the material, and to the individual farmers and their veterinary surgeons.—Yours faithfully, Alastair N. Worden, Cromwell House, Huntingdon. *August 31st*, 1953.

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FAECAL EXAMINATIONS IN THE DOG

Sir,—Mr. Vaughan's article (*Vet. Rec.* **65**. 397) and Mr. A. T. Hose's letter (*Vet. Rec.* **65**. 445) interested me and my observations on *Trichuris vulpis* may interest them and others.

Ancylostomum caninum in the environs of Perth, Western Australia, has been noted by me to be common only in dogs which have come from Eastern Australia, or in those kept in kennels in which dogs from Eastern Australia have been housed. When making examinations for hookworm we have found, almost invariably, the ova *T. vulpis;* indeed, we had come to look upon the finding of these ova as almost diagnostic of the presence of hookworm as well.

Recently, however, a Blue Spaniel was reported by the owner to have chronic diarrhoea; he said that if he treated the animal with sulphaguanadine the diarrhoea ceased, but that when he stopped treatment it recommenced. He also found that the diarrhoea diminished when the animal was fed on dog biscuits, but recommenced when she was fed on her normal diet. She was brought here and faecal examination showed no hookworm ova but very many ova of *T. vulpis*. This owner had no Eastern Australian dog, nor had his dogs had anything to do with such dogs, so the absence of hookworm ova was not surprising. It was decided, therefore, lacking any other evidence of a cause for the diarrhoea, that *T. vulpis* must be incriminated. The bitch was given about twice the normal dose of tetrachlorethylene for her weight, with the result that she evacuated a mass of *T. vulpis* and no other species. Since then she has had no recurrence of diarrhoea, and it was June 30th, 1953, when she was treated.

About a week ago three Dachshunds were reported with the same symptoms from a kennel which has had much association with Eastern Australian dogs, and where the owner, being aware of the likelihood of the incidence of hookworm, treats the inmates of the kennel accordingly. Treatment on the usual lines for hookworm, however, did not stop the chronic diarrhoea.

The animals were examined here and only *T. vulpis* ova were found. They were treated with approximately double the normal dose, for their weight, of tetrachlorethylene and passed hundreds of *T. vulpis*. Already they appear to be recovering and another examination of the faeces will be made; if need be, they will be treated again.

The excessive dosage of tetrachlorethylene does not appear to distress of dogs unduly, especially if food is withheld for at least two hours after the administration.—Yours faithfully, T. W. Hogarth, 4, Devon Road, Swanbourne, Western Australia. *August 17th*, 1953.

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BOS BRACHYCEROS IN AFRICA

Sir,—The following observations on extremely dwarf cattle occurring in the Sudan appear to agree with many of Jeffreys' contentions in his recent articles (*Vet. Rec.* **65.** 393-396 and 410-415) concerning the significance of dwarf cattle elsewhere in modern Africa, but the fact is also emphasised that the terms "*Bos brachyceros*" and "Dwarf cattle" are not necessarily synonymous. It still is not proven that all the dwarf cattle of Africa are of *brachyceros* descent, and in any case it is quite obvious that many of the present-day dwarfs are of a very mixed ancestry.

The Sudanese dwarf beasts are exceptionally small, though normally of good conformation; but they differ in some essentials from the typical *brachyceros* type. Their precise origin consequently is obscure. It is remarkable, however, that the husbandry of the Sudanese dwarfs closely follows that of the "Cultural cattle pattern" of other pagan negroid tribes, as described by Jeffreys, and if a *brachyceros* ancestor could be assumed upon this, and the other evidence at present available, then of course the presence of these cattle in the Sudan would strongly support the thesis that *Bos brachyceros* originally migrated down the Nile valley, and from thence extended to Nigeria and East Africa.

The existence of dwarf cattle in the Sudan is considered worthy of record because it is not recognised by any of the writers who have speculated on the possible history of *Bos brachyceros*, and dwarf cattle in general, throughout Africa. Curson & Thornton (1936) do record the occurrence of small cattle in nearby Eritrea, and it is also well recognised that very small cattle are common in the hilly country of Abyssinia bordering the Sudan. These beasts do not, however, present a markedly brachycephalic conformation, and their claim to *brachyceros* descent is perhaps even less substantial than that of the Sudanese dwarfs.

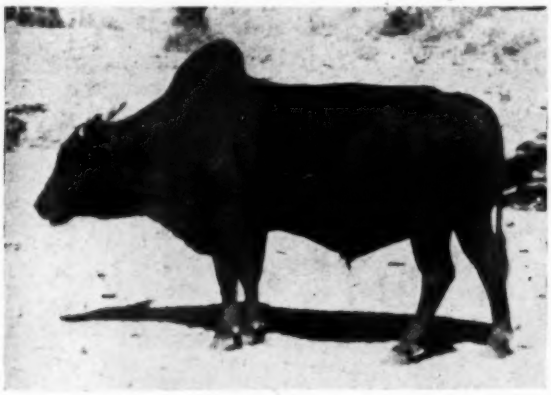
A further point of great interest in connection with the Sudanese dwarfs is that some of them bear a reputation in common with the West African Shorthorn for resistance against local forms of trypanosomiasis. This is particularly true of the Nuba cattle (Balfour, 1913), which are preserved to-day solely by virtue of a small "tsetse pocket" remaining in the Nuba mountains.

The Dwarf Cattle of the Sudan

(1) *The Nuba Cattle*

These animals are confined to mountainous country in the immediate vicinity of the small town of Dellami. They are only a remnant of the cattle which existed throughout the Nuba mountains half a century ago, and possibly they are not now typical of the older stock. Even the Dellami cattle, being very few in numbers, would probably have disappeared already but for the segregating influence of a small "tsetse pocket" in that area. For a time, no doubt, the entire Nuba stock was more completely protected by an isolation resulting from continuous warfare between the Nuba and surrounding Arabs, and in this struggle small cattle had the advantage of agility and thriftiness. It is also noteworthy that these cattle could easily be concealed, and this was due not only to their size but also to their docility and general tractability. In the latter respect these animals differed widely from the West African "Muturu" which is very difficult to handle although reputedly of almost pure *brachyceros* descent.

It may not be deemed irrelevant at this point to note that all the Nuba stock, including sheep, goats and poultry, is of dwarf proportions.



An adult Nuba bull measuring 50 inches to the summit of the hump

Modern Nuba cattle are indeed extremely dwarf, although there is no suggestion of degeneracy in their conformation. Adult beasts stand 36 to 50 inches in height; the wide variation being due to the presence of a large hump in the male. As in all Zebus there is a well-developed skinfold extending from the throat to the brisket in both sexes. The colour varies through all the known possibilities in cattle, with the exception of good roans, and Jeffreys notes this wide colour variation as a general characteristic of *Bos brachyceros*. Another *brachyceros* character to be seen in the Nuba beast is the short head with a broad muzzle and prominent supraorbital region. Horn conformation is not constant, but it can always be described as short. It is possible to discern lateral straight horns, lyre-shaped horns, and horns curving forwards, downwards, and then backwards. Polled cattle, or cattle with congenitally loose horns, are not in evidence.

The coincident occurrence of Zebu and *brachyceros* characteristics is apparently to be seen also in some Egyptian cattle (Curson & Thornton. 1936). Such a peculiar combination of characters may be of especial interest to geneticists.

It is said that the Nuba people do not slaughter their cattle for meat, although a few bulls are sacrificed on special occasions, and as the cows give very little milk, the cattle can only be regarded as a form of capital by their owners. In temperament, as previously mentioned, both cows and bulls are docile, and Nuba boys may often be seen riding the bulls in the manner of the Baggara Arabs.

(2) *The Ingessana Cattle*

During recent times the Ingessana have acquired cattle of pure Kanana, Shorthorn Zebu, type, but they still possess some small cattle which are not brachycephalic. These small cattle not only possess the Zebu hump and skinfolds, but they also have the same long skull formation as the Zebu.

It is, of course, possible that the Ingessana once possessed cattle similar to those of the Nuba, for they are also a pagan negroid tribe who have survived in a hilly fastness. To-day, however, the Ingessana herds may be found ranging on open country many miles from the hills, and this has encouraged the adoption of larger animals. The original dwarf cows may have been frequently crossed with large Zebu bulls, and this could account for the present-day dwarfs of such nondescript appearance. Alternatively it is suggested that the small Ingessana cattle have been obtained as such from Abyssinia.

In conclusion, it is stressed that it is most unlikely that any of the dwarf cattle of the Sudan represent the local result of an adjustment to a particular environment, or, on the other hand, that they are simply the products of degeneracy. It seems most likely that these cattle were "pre-adaptations" to the peculiar conditions of a particular form of human culture, and in this case they may well have been primarily of *brachyceros* descent. The only other possible explanation concerning the origin of these dwarfs is that they are the result of selective breeding, or natural selection, and neither of these possibilities is probable. The resistance or tolerance of some of these cattle to trypanosomiasis may be an indication of their antiquity in the present environment.—Yours faithfully, H. D. Mills, University College of Khartoum, Faculty of Veterinary Science, P. O. B. No. 32, Khartoum North, Sudan. *August 17th*, 1953.

References

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Curson, H. H., & Thornton, R. W. (1936). *Onderstepoort J. vet. Sci.* 7. 2.

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THE OSTRICH

Sir,—On reading D. D. Ogilvie's interesting and illuminating article in the *Record* of August 15th, I note that he queries the habits and the qualities of the ostrich. He implies that ostriches do not bury their heads in sand and that they are not stupid birds. However, a friend, J. Huntham, recently returned from Kenya, does not agree with Mr. Ogilvie's observations, and begs me quote the following incident.

It happened that a party on safari were observing animal life on a desert fringe in the early stillness of a morning before the heat of the day made accurate distance observation impracticable. The party enjoyed the vantage point at a fairly solitary outcrop and could observe open land on three sides. A flock or herd of ostriches were lazily meandering in the west where the outcrop met the desert, and one of the party excitedly observed that a male lion was stalking the herd, which included some young birds. Suddenly an old stag bird, probably the father of the flock, elevated his head to a considerable height and before the proverbial " knife " was said the entire flock was in full flight for the safety of the open ground. The lion turned with a muttered imprecation and went his way seeking easier prey.

The observers could follow the flight of the birds and noted (in agreement with Mr. Ogilvie's "selling the dummy") that individual birds tended to semi-circle in flight and " change legs." One of the much smaller birds in executing this movement inadvertently crossed his legs and "came a cropper." By the time he had recovered the main body of the flock were considerably ahead, and ostrich junior had quite a lot of ground to make up.

Having reached the secluded safety of the sand the ostriches naturally still in an agitated state, went into hiding by the well-known expedient of burying their heads in the sand. The young bird still in pursuit arrived at this spot, sensed that something was amiss, and momentarily halted. He was heard to wail aloud: "Oh dear! Not a soul in sight."

Then he ran on.

Moral: Ostriches are not alone in "selling the dummy."—A. McGuinness, Glenmore House, Minehead, Somerset. *August 22nd*, 1953.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th August, 1953	7	2	32	—	81
Corresponding period in—1952	52	10	8	—	16
1951	14	—	32	—	71
1950	17	—	1	—	8
1st January to 15th August, 1953 ...	465	28	693	—	2,034
Corresponding period in—1952	416	469	142	1	620
1951	289	26	586	4	636
1950	250	16	101	19	51

Advertiser's Announcement

New Veterinary Pack.—Glaxo Laboratories Ltd., Greenford, Middlesex, announce the introduction, from August 31st, of Veterinary Mylipen, an aqueous suspension of procaine penicillin G. This new veterinary pack will be available as a multi-dose 30 c.c. rubber capped bottle (Silicone treated). Each c.c. contains 300,000 units procaine penicillin G.